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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/616,643	07/14/2000	Caleb E. Welton	1958.2004-000	6573

21005 7590 10/03/2003

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EXAMINER

ALAM, SHAHID AL

ART UNIT PAPER NUMBER

2172

DATE MAILED: 10/03/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/616,643

Applicant(s)

WELTON ET AL.

Examiner

Shahid Al Alam

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 15 September 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-40 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 19-23, 37 and 39 is/are allowed.
- 6) ☒ Claim(s) 1-18, 24-36, 38 and 40 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Request For Continued Examination (RCE)***

1. The request filed on 15 September 2003 for a RCE based on parent Application No. 09/616,643 is acceptable and a RCE has been established. An action on the RCE follows.

### ***Drawings***

2. The drawings were received on 2 December 2002 are acceptable as Formal Drawings.

### ***Response to Arguments***

3. Applicant's arguments with respect to the 35 USC 112 second paragraph rejection(s) of claim(s) 1, 24 and 36 – 40 have been fully considered and are persuasive. Therefore, the 35 USC 112 rejection has been withdrawn.

Applicant's arguments with respect to claims 1 – 18, 24 – 36, 38 and 40 have been considered. However, upon further consideration, a new ground(s) of rejection is made with further in view of U.S. Patent Number 5,404,510 issued to Gregory S. Smith et al. (hereinafter "Smith").

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1 – 18 and 24 – 36, 38, and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Number 5,943,677 issued to Grant Hicks (“Hicks”) and in view of U.S. Patent Number 6,493,718 issued to Cristian Petculescu et al. (“Petculescu”) and further in view of U.S. Patent Number 5,404,510 issued to Gregory S. Smith et al. (hereinafter “Smith”).

With respect to claims 1, 36, 38 and 40, Hicks teaches a method of storing data values in a multidimensional database (column 9, lines 63 – 64) comprising:

identifying a plurality of dimensions, wherein each of the dimensions is indicative of a plurality of storage locations (column 1, lines 21 – 23);

indicative of an association between the attributes (column 4, lines 54 – 67 and Table 1 indicate association between time, region and product);

attributing a plurality of data values to each of the attributes and storing the data values on a storage medium based on the data values (column 1, lines 23 – 30),

associated values (column 4, lines 40 – 49), in term of storage . . . associated data values . . . (column 2, lines 34 – 39).

Hicks teaches a multi-dimensional databases having different levels and dimensions.

Hicks does not explicitly teach identifying a hierarchy of attributes within at least one of the dimensions as claimed.

Petculescu discloses claimed hierarchy of attributes within at least one of the dimensions (column 2, lines 55 – 64 and column 7, lines 9 - 19; Petculescu).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine Petculescu with Hicks to reduce the number of roundtrips to the OLAP server, yet weights this benefit with the costs of high-volume database queries (column 2, lines 31 – 33; Petculescu).

Hicks and Petculescu do not explicitly teach data values are retrievable by a single fetch operation as claimed.

Smith teaches claimed data values that are retrievable by a single fetch operation (column 10, lines 61 – 68; column 15, line 65 – column 16, line 2).

It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to combine Smith with Hicks and Petculescu to reduce the search time to locate a particular record in a I/O operation and to provide efficient operation of the database system.

As to claim 2, the data values are stored on the storage medium in proximity to associated data values, wherein the associated data values are attributed to associated attributes (column 4, lines 40 – 44, Hicks).

As to claim 3, the data values further comprise aggregate values and detail values (see Figure 3A and 3B, column 4, lines 43 – 59, Hicks).

As to claim 4, each of the aggregate values includes at least one of other data values (see Figure 3A and 3B, column 4, lines 43 – 59, Hicks).

As to claim 5, the aggregate values comprise at least one detail value (see Figure 3A and 3B, column 4, lines 43 – 59, Hicks).

As to claim 6, the aggregate values further comprise at least one data value selected from the group consisting of aggregate values and detail values (see Figure 3A and 3B, column 4, lines 43 – 59, Hicks).

As to claim 7, the association is a parent-child association between an aggregate value and at least one child data value (see Figure 3B, Hicks).

As to claim 8, the association is between an aggregate value and at least one data value (see Figure 3B, Hicks).

As to claim 9, a plurality of levels, wherein each of the aggregate values on one level includes the data values on a successive level (see Figure 3B, top level, L3 is

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District level and represent aggregate values and L2 is Product level and L1 is detail level, Hicks).

As to claim 10, the association is an inclusion of the plurality of data values in the aggregate value (see L3 of Figure 3B, column 4, lines 44 – 49, Hicks).

As to claim 11, each of the data values associated with an aggregate values are stored proximate to the other data values associated with the same aggregate value (see Figure 3A, column 4, lines 40 – 44, Hicks).

As to claim 12, the proximate values are stored adjacently (see Figure 3A, column 4, lines 40 – 44, Hicks).

As to claim 13, storing the aggregate value on the storage medium adjacent to the associated data values (column 4, lines 40 – 49, Hicks).

As to claim 14, the data values in a storage segment are manipulated concurrently (column 2, lines 29 – 41).

As to claims 15 – 18, the storage medium is a disk cache and the storage segments are cache pages corresponding to pages on a disk; storing the data values on a common cache page; the storage medium is a disk and the storage segments are disk pages and storing on a common disk page (see Figure 1, column 4, lines 2 – 14).

With respect to claim 24, Hicks teaches a multidimensional database (see title and abstract) comprising:

a memory (10) having a cache (18) and a database engine (12);

a mass storage device (30) in communication with the memory and operable to store a plurality of data value;

a kernel (13) included in the database engine, wherein the kernel is operable to manipulate data values between the memory, the cache, and the mass storage device; and a sparsity manager (15) is operable to determine a storage organization of the data values (see Figure 1, column 3, line 57 - column 4, line 18),

associated values are likely to be retrieved simultaneously (Applicants' "likely to be retrieved simultaneously" is synonymous to Hick's retrieved data from a data storage warehouse (column 3, lines 58 – 67), data values frequently accessed together are stored physically near each other (column 4, lines 40 – 49), in term of storage . . . associated data values . . . (column 2, lines 34 – 39).

Hicks teaches levels L1, L2 and L3 in Figure 3B (see column 4, lines 56 – 59), which are a form of hierarchy but Hicks does not explicitly indicate a predetermined hierarchy as claimed.

Petculescu discloses claimed hierarchy (. . . a set of member sub-hierarchies for each dimension specified by the query . . . column 2, lines 55 – 64; Petculescu).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine Petculescu with Hicks to reduce the number of roundtrips to the OLAP server, yet weights this benefit with the costs of high-volume database queries (column 2, lines 31 – 33; Petculescu).

The subject matter of claims 25 – 35 are rejected in the analysis above in claims 2 – 18 and these claims are rejected on that basis.



***Allowable Subject Matter***

5. Claims 19 – 23, 37 and 39 are allowed over the prior art of record.

The following is a statement of reasons for the indication of allowable subject matter: regarding claims 19, 37 and 39, Applicant's claimed invention of "identifying a plurality of dimensions . . . a hierarchy of attributes . . . stored on the storage medium in proximity to associated data values . . . the data values further comprising aggregate values and detail values . . .," combined with ". . . aggregating at least one of the dimensions having a hierarchy by traversing each of the aggregate values included in the dimension; and including, in an aggregation total, the associated data values corresponding to the aggregate value would not have been obvious over, nor would have been fairly suggested by the prior art of record.

The dependent claims 20 – 23, being definite, further limiting, and fully enabled by the specification are also allowed.


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***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shahid Al Alam whose telephone number is (703) 305-2358. The examiner can normally be reached on Monday-Thursday 8:00 A.M. - 4:00 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kim Y Vu can be reached on (703) 305-4393. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

  
Shahid Al Alam  
Primary Examiner  
Art Unit 2172

26 September 2003